

REMARKS

Claims 1-6, 8-12, 14, 16, 18-22, 24-26, and 28-36 remain pending in this application. Claims 1, 5-6, 9-12, 14, 16, 18, 20-21, and 34-35 remain rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,720,896 to Polinski et al. (Polinski) in view of U.S. Patent No. 5,202,303 to Retallick et al. (Retallick), U.S. Patent No. 6,040,266 to Fay, III et al. (Fay), U.S. Patent No. 5,183,401 to Dalla Betta et al. (Dalla Betta), and U.S. Patent No. 5,110,561 to Hitachi et al. (Hitachi). Claims 24-26, 29, 31, and 36 were rejected under 35 U.S.C. 103(a) as being unpatentable over Polinski in view of Retallick, Fay, Dalla Betta, Hitachi, and Butler et al. (RMRS-RP-9). Claims 2, 8, and 22 were rejected under 35 U.S.C. 103(a) as being unpatentable over Polinski in view of Retallick, Fay, Dalla Betta, and Hitachi, and further in view of U.S. Patent No. 5,207,053 to Spadaccini et al. (Spadaccini). Claims 3 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Polinski in view of Retallick, Fay, Dalla Betta, Hitachi, and Butler, and further in view of U.S. Patent No. 5,228,847 to Lywood et al. (Lywood). Claim 30 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Polinski in view of Retallick, Fay, Dalla Betta, Hitachi, Butler, and Lywood. Claim 4 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Polinski in view of Retallick, Fay, Dalla Betta, and Hitachi, and further in view of U.S. Patent No. 5,645,803 to Steenackers et al. (Steenackers). Claim 28 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Polinski in view of Retallick, Fay, Dalla Betta, Hitachi, and Butler, and further in view of Steenackers. Claims 32-33 remains rejected under 35 U.S.C. 103(a) over Polinski in view of Retallick, Fay, Dalla Betta, Hitachi, and Butler. The current basis for the rejection of dependent claim 27 remains unclear.

Reconsideration of the present application in light of the above amendments and the following remarks and an indication of allowance of the pending claims are respectfully requested.

a. The Examiner has not fully addressed the Applicants' amendments made in its May 5, 2008 Response

Applicants first respectfully point out that the Examiner has not properly addressed the amendments to independent claims 6 and 24 in Applicants' response dated May 5, 2008. In particular, Applicants had amended claim 6 in the May 5, 2008 response to add the following underlined claim language: "A catalytic

combustor comprising...a plurality of separate catalytic elements disposed along a flow axis of the combustor, each of the plurality of separate catalytic elements comprising an identical cross-section and being misaligned and axially rotated about the flow axis with respect to an adjacent catalytic element effective to cause mixing of a flow about the flow axis..." The Examiner arguments in the present August 6, 2008 Office Action with respect to independent Claim 6 fail to address this added limitation and were identical to the Examiner's arguments in the prior February 13, 2008 Office Action.

Similarly, Claim 24 was amended in the May 5, 2008 response as follows:

A catalytic combustor comprising:  
an upstream pressure boundary comprising a catalytic surface disposed therein for receiving a fuel/oxidizer mixture and discharging a partially oxidized fuel/oxidizer mixture;  
a downstream pressure boundary defining a pressure boundary cross-sectional flow area for receiving the partially oxidized fuel/oxidizer mixture; and  
a catalyst-coated reticulated foam support disposed within the second downstream pressure boundary for receiving a first portion of the mixture and presenting a support cross-sectional flow area less than the second downstream pressure boundary cross-sectional flow area to define a bypass passageway for allowing a second portion of the fuel/oxidizer mixture to bypass the foam support; and  
wherein the bypass passageway is disposed around a portion of an outer perimeter of the reticulated foam support  
~~a transition pressure boundary disposed between the upstream pressure boundary and the downstream pressure boundary, the transition pressure boundary comprising a narrowed flow area region effective to generate a venturi effect disposed between an inlet end receiving the oxidized fuel/oxidizer mixture from the upstream pressure boundary and an outlet end discharging the partially oxidized fuel/oxidizer mixture into the downstream pressure boundary, wherein the transition pressure boundary is configured to substantially limit combustion of the partially oxidized fuel/oxidizer mixture from the upstream pressure boundary.~~

In the present Office Action, the Examiner argues claim limitations that are no longer in the pending claims, e.g. the above-deleted language. See e.g. pages 13-14 of the August 6, 2008 Office Action. Moreover, the Examiner has not yet addressed the added limitation to independent claim 24 namely, "wherein the bypass passageway is disposed around a portion of an outer perimeter of the reticulated foam support."

In view of the above, in the August 6, 2008 Office Action, the Examiner has not properly addressed all the subject claim limitations as required by MPEP §706

and 37 CFR 1.104 (c)(2). Further, by not addressing the currently pending claim limitations, the Examiner has not made out a *prima facie* case of obviousness for at least independent claim 6 and 24, and all claims dependent therefrom per MPEP 2143. Applicants thus respectfully request withdrawal of the rejections under 35 U.S.C. 103(a) and allowance of the pending claims.

Moreover, Applicants resubmit for the reasons set forth in its May 5, 2008 Response that independent claim 6 is patentable over the five-way combination of Retallick, Polinski, Fay, Dalla Betta and Hitachi because the references, even if combined, fail to teach or suggest a “plurality of separate catalytic elements disposed along a flow axis of the combustor, each of the plurality of separate catalytic elements comprising an identical cross-section and being misaligned and axially rotated about the flow axis with respect to an adjacent catalytic element effective to cause mixing of a flow about the flow axis...” Further, as set forth in Applicants' May 5, 2008 Response, no rational reason exists to combine the references as the Examiner has done to arrive at the claimed invention of independent claim 6.

With respect to independent claim 24, Applicants also resubmit, for the reasons set forth in its May 5, 2008 Response, that independent Claim 24 is patentable over the six-way combination of Polinski in view of Retallick, Fay, Dalla Betta, Hitachi, Butler, and Lywood because no rational reason exists to combine the references as the Examiner has done to arrive at the claimed invention.

b. **No rational reason exists for to combine the references as the Examiner has done to arrive at the claimed invention of independent Claim 1**

With respect to Claim 1, the Examiner does appear to have acknowledged the Applicants' claim language by her comments in the Response to Arguments portion on pages 26-27 of the August 6, 2008 Office Action. Nevertheless, Applicants maintain that the combination of cited references fails to establish a *prima facie* case of obviousness with respect to Claim 1 for the reasons set forth below.

Claim 1 was rejected on the five-way combination of Polinski in view of Retallick, Fay, Dalla Betta and Hitachi. As stated in *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006, cited with approval in *KSR Int'l v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007), “rejections on obviousness grounds cannot be sustained by mere conclusory

statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." (Emphasis added). Specifically, "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the new claimed invention does." *Id.* While doing so, "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning." *Id.* Applicants maintain that the Examiner's rejection of Claim 1 over the combination of five references is based upon hindsight reasoning and no rational reason exists for combining the references as the Examiner has done.

Claim 1 requires in part:

a first catalytic stage comprising a metallic catalyst support and receiving an oxidizer and a fuel and discharging a partially oxidized fuel/oxidizer mixture;  
a second catalytic stage comprising a ceramic reticulated foam catalyst support disposed within a pressure boundary defining a pressure boundary cross-sectional flow area...

The Examiner admitted on page 4 of the February 13, 2008 Office Action and admits on page 4 of the August 6, 2008 Office Action that Polinski does not teach a metallic catalyst support for the first catalytic stage and a ceramic reticulated foam catalyst support for the second catalytic stage. In addition, the Examiner further contends that Retallick teaches a metallic catalyst support for a first catalytic stage at col. 2, line 58 through col. 3, line 3 of Retallick. The Examiner still maintains on page 4 of the August 6, 2008 Office Action that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Polinski with the teachings of Retallick since ceramic supports are likely to shatter due to thermal shock.

Applicants respectfully resubmit that the Examiner's reasoning for combining the references to arrive at the claimed invention lacks a rational basis. Polinski is directed to a catalyst system divided into upstream and downstream portions. *Assuming arguendo* for purposes of this argument only that the upstream portion is a first catalytic stage as claimed, Polinski discloses at numerous places in its specification that the upstream portion (first catalytic stage) is protected against "thermal conductivity and radiant heat transfer from the downstream portion." As a result, the upstream portion (first catalytic stage) of Polinski is protected from

"excessively high temperatures" and is allowed "to operate at relatively lower temperature."

See e.g. col. 4, lines 51-53 of Polinski (emphasis added):

In this way, not only is the upstream portion of the catalyst protected against excessive temperatures but unique advantages are realized...

See e.g. col. 5, lines 27-32 of Polinski (emphasis added):

As shown in FIGS. 3A, 3B, 3C, and 3D, various kinds of constricted passages may be used between the protected upstream portion 20 and the downstream portion of the catalyst system to reduce radiant heat transfer as well as thermal conduction from the downstream portion to the upstream portion.

See e.g. col. 5, lines 57-61 of Polinski (emphasis added):

As a result, heat transfer from the downstream portion is effectively reduced allowing the upstream portion of the catalyst system to operate at relatively lower temperature.

See e.g. col. 6, lines 50-53 of Polinski (emphasis added):

Additionally, the temperature of the protected upstream portion 20 is preferably further reduced by using an enclosed wall 52 having low reflectivity and low thermal conductivity properties.

Accordingly, susceptibility to high temperature and shattering due to thermal shock is not an issue in the upstream portion (first catalytic stage) of Polinski because the temperatures of the upstream portion (first catalytic stage) are maintained at relatively low temperatures. As such, one of ordinary skill in the art would not have reasonably been led to modify the upstream portion (first catalytic stage) of Polinski to include the metallic catalyst support of Retallick to eliminate the possibility of shattering due to thermal shock. Only in hindsight view, based upon Applicants' teachings, would one make the Examiner's proposed substitution. For the above reasons, Applicants submit that no rational reason exists to combine the references as the Examiner has done to reject independent claim 1 under 35 U.S.C. 103(a) and that independent claim 1 is now in condition for allowance.

Further, Applicants note that at page 26 of the August 6, 2008 Office Action, the Examiner further appears to argue other reasons for combining the teachings of

Polinski and Retallick, which further lack the rational reasoning required for establishing a *prima facie* case of obviousness. The Examiner states at page 26:

Although Polinski et al discloses means of dissipating the heat such that not only is the upstream portion of the catalyst protected against excessive temperatures, but unique advantages are realized, for example, the ability to construct two portions of the catalyst system from different catalyst compositions and/or different catalyst substrates in order to obtain and maintain a low ignition temperature and to maximize the efficiency and operation of the catalyst system at minimum cost (see column 4, lines 34-59).

Applicants also respectfully submit that the above reasoning again is based on the Applicants' own disclosure, is hindsight reasoning, and lacks the requisite rational reasoning to establish a *prima facie* case of obviousness. Importantly, as admitted by the Examiner above, Polinski teaches that the two portions of its catalyst system (the lower temperature upstream portion 20 and hotter downstream portion 26) may include different catalyst compositions and different catalyst substrates. Nevertheless, the Examiner contends it would have been obvious to modify the catalyst system of Polinski with yet another catalyst from Retallick. Applicants respectfully disagree and submit that one skilled in the art would not have rationally substituted the catalyst of Retallick for the catalyst of Polinski as Polinski already enabled the construction of two portions of a catalyst system from different catalyst compositions.

The above argument is consistent with two recent Board of Patent Appeals and Interferences decisions, which held that a legal conclusion of obviousness is not supported when a primary and secondary reference are combined and the problem solved by the secondary reference was already solved by the primary reference. In both decisions, "the Board" found no rational reason exists why one skilled in the art would look to the secondary reference and combine the teachings therein with the primary reference to address a problem already solved by the primary reference. See *Ex Parte Rinkevich et al.*, Appeal 20071317 (decided May 29, 2007) (holding "we find the problem proffered by the Examiner is already solved by Savill [the primary reference]...[t]herefore, we agree...that the Examiner has impermissibly used the instant claims as a guide or roadmap in formulating the rejection"). See also *Ex Parte Green*, Appeal 20071271 (decided June 12, 2007) (holding "one of ordinary skill in the art would not have reasonably looked to Smashekar [(the

secondary reference)] to provide a server capability already provided by Kuwata [(the primary reference)]... [t]herefore, we conclude that an artisan having common sense at the time of the invention would not have reasonably considered embedding a server within an existing server in the manner suggested by the Examiner.").

In the present application, the primary reference (Polinski) has already provided a catalyst system that allows for different catalyst compositions. Accordingly, no rational reason exists to bring in the teachings of yet another reference (Retallick) to accomplish the same result already provided in the primary reference (Polinski), namely the construction of two portions of a catalyst system from different catalyst compositions. In view of the above, Applicants submit that for these further reasons that no rational reason exists to combine the references as the Examiner has done to reject independent Claim 1 under 35 U.S.C. 103(a) and that independent Claim 1 is now in condition for allowance.

**c. Dependent Claims**

Dependent claims 2-4, 32, and 34 are dependent on Claim 1 and thus include the limitations of independent Claim 1. For the reasons set forth above with respect to independent Claim 1, dependent claims 2-4, 32, and 34 are in condition for allowance.

Dependent claims 8-12, 14, 16, 18-22 are dependent on Claim 6 and thus include the limitations of independent Claim 6. For the reasons set forth above with respect to independent Claim 6, dependent claims 8-12, 14, 16, 18-22 are in condition for allowance.

Dependent claims 25-26 and 28-35 are dependent on independent Claim 24 and thus include the limitations of independent Claim 24. For the reasons set forth above with respect to independent Claim 24, dependent claims 25-26 and 28-35 are in condition for allowance.

**Conclusion**

Accordingly, Applicant submits that all claims are in condition for allowance and request that a Notice of Allowance be issued. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark W. Scott". It is written in a cursive style with some loops and variations in letter height.

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Date

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